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THREE NOTIONS OF *RESOLUTIO* AND THE STRUCTURE OF REASONING IN AQUINAS¹

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R*ESOLUTIO*, better known by the English transliteration of its Greek counterpart, "analysis," has been touted as "the conceptual model for some of the most important ideas in the history of philosophy, including the history of the methodology and philosophy of science."² But while resolution/analysis may be important in the histories of philosophy and science, its own history is, to say the least, confused. A Renaissance commentator, Jeremias Triverius gives some sense of this when, after giving a list of four methods of dialectic (division, definition, demonstration, and resolution),³ he writes,

¹ I have used the following abbreviations for works by Thomas Aquinas. All translations of Aquinas are my own. *Commentum in Quatuor Libros Sententiarum* (ed. Busa): *In Sent*; *Compendium Theologiae* (ed. Busa): *Comp Theol*; *Expositio Super Librum Boethii De Trinitate* (ed. Decker): *Exp de Trin*; *In Aristotelis Libros Posteriorum Analyticorum* (ed. Marietti): *In Anal Post*; *In Duodecem Libros Metaphysicorum Aristotelis Expositio* (ed. Marietti): *In Meta*; *In Librum Beati Dionysii De Divinis Nominibus Expositio* (ed. Marietti): *In Div Nom*; *Sententia Libri Ethicorum Aristotelis ad Nichomachum*: *In Ethic*; *Sententia Libri Politicorum Aristotelis* (ed. Leonine): *In Pol*; *De Substantiis Separatis* (ed. Busa): *De Sub Sep*; *Summa Contra Gentiles* (ed. Leonine): *SCG*; *Summa Theologiae* (ed. Leonine): *ST*; *Questiones Disputatae de Veritate*: *QDV*.

² Jaakko Hintikka and Unto Remes, *The Method of Analysis* (Boston: D. Reidel, 1974), p. 1.

³ These four methods of dialectic are also given by a number of ancient commentators, for example, Ammonius (*In Porphyrii Isagogen*, in *Commentaria in Aristotelem Graeca* [hereafter, *CAG*], ed. Maximilian Wallies [Berlin, 1891], vol. IV, pt. 6, p. 34, ll. 19-20) and a later commentator, David (*Davidis Prolegomena et in Porphyrii Isagogen Commentarium*, *CAG*, ed. Adolf Busse [Berlin, 1904], vol. 18, p. 88, ll. 6-10).

Now anyone who has some knowledge of dialectical matters knows what Definition, Division, and Demonstration are. There is no general agreement, however, so far as I can see, on Resolution. Some identify it with Division. Others regard it as contrary [to Division], . . .⁴

Triverius, like many modern commentators, adds to, rather than sorts out, the confusion, continuing, "And since each one is entitled to his opinion, I am now maintaining that Resolution is contrary to Demonstration. . . ."⁵ Many centuries before Triverius we find a similar ambiguity in Greek commentators on Aristotle, who outline several types of analysis. Unlike Triverius, however, most seem untroubled by the multiple types; Ammonius and David, without puzzlement, explain carefully that analysis is the opposite of *each* of the other three methods.⁶ The lack of

⁴ Jeremias Triverius, *In texnhn* [sic] *Galenī clarissimi commentarii* (Lyon, 1547), p. 14; cited and translated in Neal Gilbert, *Renaissance Concepts of Method* (New York: Columbia University Press, 1960), p. 106. Galen's opening remarks of the *Ars medica*, giving three methods of teaching (analysis, synthesis, and definition) is a common locus for the discussion of resolution/analysis in the Middle Ages and Renaissance. Galen's contribution, at least for Aquinas, seems to have been completely mediated by Medieval Arabic commentators. Galen's own discussions are either incomplete, as in the opening passage to the *Ars medica* (in *Claudii Galeni Opera Omnia*, ed. C. G. Kühn, [Repr. Hildesheim: Georg Olms, 1965], vol. I, pp. 305-306), which merely mentions the word, or are unclear accounts of analysis (Cf. Galen's discussion of analysis in *De Peccatorum*, in *Opera Omnia*, vol. 5, ch. 5, pp. 80-81). On two of the Arabic commentaries' descriptions of analysis to accompany medieval translations of Galen, see below, nn. 80 & 83. On Galen's supposed contribution to the notion of resolution and method in the development of experimental science, see A. C. Crombie, *Robert Grosseteste and the Origins of Experimental Science* (Oxford: Clarendon Press, 1953), especially pp. 76-80, and Gilbert, *Renaissance Method*, pp. 13-27, 44-46.

⁵ Triverius, *In texnhn*, p. 14; Gilbert, p. 106.

⁶ For analysis as the opposite of division, definition, and demonstration, see Ammonius, *In Aristotelis Analyticorum Priorum Librum I Commentarium*, CAG, ed. Maximilian Wallies, (Berlin, 1891), vol. IV, pt. 6, p. 7, l. 29-p. 8, l. 9, and David, *In Porph.*, p. 90, ll. 4-24. For other descriptions of multiple types of resolution often named "physical," "geometrical," "syllogistic," etc., see Alexander of Aphrodisias, *In Analyticorum Priorum Librum I Commentarium*, CAG, ed. Maximilian Wallies, (Berlin, 1883), vol. II, pt. 1, p. 7, ll. 12-27; Ammonius, *In Anal Pr.*, p. 5, ll. 10-34; Idem., *In Porph.*, CAG, vol. IV, pt. 6, p. 36, ll. 1-9; David, *In Porph.*, p. 103, ll. 23-32; Ioannis Philoponi, *In Aristotelis Analytica Priora Commentaria*, CAG, ed. Adolf Busse, (Berlin 1888), vol. XIII, p. 5, ll. 16-19.

"general agreement" Triverius mentions, however, whether explicitly articulated or not, whether seen as a problem or not, runs throughout the history of resolution. Though unarticulated by Aquinas and only seen as a problem by his commentators, Aquinas's use and discussion of resolution are a mirror of this complexity and a mark of the importance and resilience of the notion.

The choice of this particular chapter in this extraordinarily complex history is, I think, defensible on several fronts. First, most of the contemporary secondary literature on analysis ignores medieval uses of resolution. It either leaps from ancient to modern sources, or mentions these medieval uses as "pale reflections" of its use as the "opposite of demonstration" (to use Triverius's categories) originating in early Greek geometry; it is this latter sense that seems to have most interested contemporary scholars.⁷ When apparently different ancient uses or sources of the term are mentioned, they are often only incidentally brought forward as examples of "misunderstandings" of true analysis.⁸ On the other hand, as I will try to show below, those

⁷ Hintikka and Remes, *Method of Analysis*, p. 11. For references to other recent discussions of geometrical analysis, see below, section III. A. C. Crombie's discussion of Robert Grosseteste's use of the resolute method in *Robert Grosseteste and the Origins of Experimental Science* (pp. 61-90) is an exception to the silence about medieval uses, but Crombie's understanding of resolution is subordinated to and slanted by his attempt to read into Grosseteste the beginning of a scientific method of falsification. L. Oeing-Hanhoff's article "Analyse/Synthese," in the *Historisches Wörterbuch der Philosophie* I (Darmstadt, 1971), pp. 232-248 gives a history which goes from Plato to the 20th century and discusses some medieval uses. It is an amazing effort, mentioning a huge number of authors, but it is a descriptive rather than critical survey. I will discuss Oeing-Hanhoff's views of analysis in Aristotle and Aquinas below.

⁸ See, for example, Thomas Heath, *A History of Greek Mathematics* (Oxford: Clarendon Press, 1921), vol. I, pp. 291-292. Heath takes Proclus to be "confused" for calling a method associated with Platonic dialectic *analysis*. On Proclus's view of analysis and its connection to geometry, see below, sections II and III. Again, two exceptions are F. M. Cornford's "Mathematics and Dialectic in the *Republic* VI-VII," *Mind*, vol. 41 (1932), pp. 37-52 and Norman Gulley's "Greek Geometrical Analysis," *Phronesis*, vol. 3 (1958), pp.

who discuss resolution in Aquinas seem to have little sense of the long and vexed tradition of the term to describe reason's movement, and hence give incomplete accounts of the notion in Aquinas. Aquinas's understanding of resolution is rich and his use varied, drawing on most of the major strands in the complicated fabric of the history of the idea; thus, to understand his uses and sources is to understand much about the history of resolution. Secondly, this episode serves as an example of the coexistence and almost seamless intertwining of philosophical terminologies in medieval and specifically Thomistic texts.⁹ It reminds us of the complex nature of Aquinas's relationship to his many sources, named and unnamed. Though his notions of resolution are drawn from diverse accounts of reasoning and reality, they are not set in opposition to one another; rather the dissonances between the multiple strains in the tradition Aquinas inherits he exploits to his own ends by contextualizing and ordering the different senses.

Lastly, while traditionally resolution/analysis has not been seen as a major category in Aquinas, it is important in two respects. First, Aquinas describes the path of reasoning in metaphysics as resolute, and in this context describes two types of resolution corresponding to the two different names and tasks of this science as "metaphysics" and "divine science."¹⁰ As such, to understand what Aquinas means by resolution is a key part of understanding what he means by metaphysics and its task. Thus discussions of resolution are an obligatory part of discussions of the nature of metaphysics.¹¹ My interest here is to provide back-

1-14. Cornford tries to connect analysis as a method of Platonic and Neoplatonic dialectic with geometrical analysis, and Gulley includes a survey of texts on analysis from the Greek commentators and Albinus and Proclus. For further discussion of these two interpretations of geometrical analysis, see below, section III.

⁹ For this way of thinking about this issue I am indebted to Mark D. Jordan's "The Plurality of Technical Terminologies in Thomas Aquinas," a paper given at the University of Notre Dame.

¹⁰ See *Exp de Trin*, q. 6, a. 1, sol. c, discussed below, in section II.

¹¹ See for example John Wippel, "'First Philosophy' According to Thomas Aquinas," in *Metaphysical Themes in Thomas Aquinas* (Washington, D.C.: The Catholic University of America Press, 1984), pp. 55-67; J. Doig, *Aquinas*

ground and context to this description of metaphysics as proceeding according to two kinds of resolution, in the form both of a discussion of the other senses of resolution, and of the sources and implications of metaphysical resolution. Secondly, resolution or analysis is one of the most consistent terms Aquinas uses to describe the path of reasoning (*ratio*) from one thing to another, and, along with composition, division, and abstraction, is one of the most important ways Aquinas specifies the essentially discursive character of human reason. Hence Aquinas's account of resolution is an important aspect of his account of human knowledge, and affords an interesting perspective on that view of knowing because resolution/analysis is, as we will see below, a part of many different philosophical traditions. Thus, a grasp of how analysis works in Aquinas brings him into conversation with those traditions in a way that an examination of other aspects of his description of reason, because they are not as widely and diversely (and almost equivocally) used, might not.

It is exactly this complicated background and diversity of uses which causes a fundamental textual problem in the Thomistic corpus: the starting and end points which define resolution change dramatically and without notice when we move around in Aquinas's texts in much the same ways described by Triverius as well as ancient commentators. In some passages Aquinas defines *resolutio* as the movement from something complex to its simple components. In these places, *resolutio* is the *first* movement of reason which is followed by *compositio*, the movement from components to compound. In this sense, resolution seems to be a breaking down into parts, and, thus, a kind of *division*, like the first description given by Triverius.¹² Though I will

on Metaphysics: A Historico-Doctrinal Study of the Commentary on the Metaphysics (The Hague, 1972), pp. 64-76; Cornelio Fabro, *La nozione metafisica di partecipazione secondo S. Tomaso d'Aquino*, 3rd. ed. (Turin: Società editrice internazionale, 1963), pp. 80-81, and "The Intensive Hermeneutics of Thomistic Philosophy," *Review of Metaphysics* 27/3 (1974), pp. 463, 486-489; Jan A. Aertsen, "Method and Metaphysics: The *via resolutionis* in Thomas Aquinas," *Modern Schoolman* 63 (1989), pp. 405-418.

¹² E.g., *In Pol*, I, lec. 1.

argue below that the root sense of this kind of resolution is the physical division into independent and atomic parts, e.g., of a sentence into its words and letters, this sense also includes the division of a thing into its logical or metaphysical "parts," e.g., of a genus into its species, of an essence into genus and differentia, and of a thing into its essence, properties, and accidents or into matter and form. These are also "parts" of a whole, but not parts into which a thing can be actually divided.

In other places, Aquinas describes *resolutio* as the movement from effects, conclusions, and particulars toward causes, premises, and universals and as following the opposite path of *compositio*.¹³ This usage seems roughly equivalent to the view of resolution that, again using Triverius's categories, *opposes* it to division because, unlike Platonic/Aristotelian division, which moves "down" from genus to species, this movement goes back "up" from particular to general, species to genus, and effect to cause, following the path in Neoplatonism of the return of all things to the One.¹⁴ In still other places, Aquinas describes counsel as proceeding "resolutely" since it assumes the end and works backward from it toward what can and should be done immediately.¹⁵ This last type seems to mirror Triverius's own preference, i.e., resolution as opposed to demonstration or, as its opposite is sometimes called in geometrical texts, "synthesis." As the opposite of demonstration/synthesis, which moves from premises (ideally, axioms, postulates, definitions) to conclusions, this resolution moves from conclusions to premises. Translated into the realm of practical reasoning, then, it moves from the end to be achieved, a "conclusion" in the realm of doing rather than knowing, toward "premises," i.e., actions which will *precede* that end.

While I agree with others who have examined the role of resolution in Aquinas's thought that a common thread ties all his uses of the term together, I want to insist that those threads are drawn from truly diverse sources and that the fabric Aquinas

¹³ E.g., *Exp de Trin*, q. 6, a. 1, sol. c.

¹⁴ For Plato's description of division, see *Sophist* 253b-d; *Phaedrus* 265d-266b; *Philebus* 18b-d. For Aristotle's, see *Posterior Analytics*, II, 5, 13.

¹⁵ E.g., *ST I-II*, q. 14, a. 5.

weaves from them gains its interest and character from these differences. Edmund Dolan, for example, concludes that "there is a resolute mode in a general or loose sense every time there is a movement from what is complex or composite to what is simple, or from effects to causes."¹⁶ But if one fails to distinguish between the different ways in which things can be related as simple and complex and between the different ways in which one can move from conclusion to premises, it is very difficult to reconcile various texts in Aquinas. Dolan himself notes that while Aquinas claims that the speculative disciplines are "resolute" in mode and the practical sciences "compositive," Aquinas nonetheless maintains that taking counsel, an undertaking of practical reasoning, is "resolute" and that perfect demonstrative syllogisms, surely a speculative use of reason, are "compositive."¹⁷ In his paper on analysis and synthesis, Louis Régis juxtaposes without comment texts from both Aquinas and his apparent sources in which resolution is described both as a method of *discovery* and as *preceding* composition with others in which he sees it as a way of *judgment*, *following* composition and confirming what has already been discovered.¹⁸ Jan Aertsen's recent article

¹⁶ Edmund Dolan, "Resolution and Composition in Speculative and Practical Discourse," *Laval Théologique et Philosophique*, vol. 6 (1950), p. 62.

¹⁷ Dolan, pp. 10-12. Dolan calls demonstrative syllogisms "compositive" because, like composition, they proceed from causes to effects. For descriptions of composition in these terms in Aquinas see, for example, *Exp de Trin*, q. 6, a. 1, sol. 3 and *ST* I-II, q. 14, a. 5. Dolan discusses many Thomistic texts in detail and concludes that the contradiction disappears when one distinguishes between "strict" and "loose" senses of resolution and composition. Practical discourse is only resolute in a loose sense because its formal object is the operable and is, hence, complex; speculative discourse is compositive only in a loose sense, on the other hand, because its object or "end" is always simpler causes (pp. 61-62). While there are elements of Dolan's explanation that are helpful and convincing, in order to make his case Dolan is required to work very hard to develop a very complex set of senses and their interrelationship, the very complexity of which seems problematic and still leaves unexplained why Aquinas would develop such an elaborate set of uses for the term. Cf. Oeing-Hanhoff, p. 238, who repeats but passes over in complete silence the apparent contradiction implicit in these two claims.

¹⁸ Louis-M. Régis, O.P., "Analyse et synthèse dans l'oeuvre de saint Thomas," *Studia Mediaevalia* (Bruges, 1948), pp. 303-330. Régis cites a passage from Calcidius in which resolution is clearly the *first* movement and one

distinguishes between "judicative" resolution, and resolution *secundum rem* and *secundum rationem*, but also states that resolution "is always directed to a terminus which in a certain respect is first," without explaining the differences in those "respects."¹⁹

First, then, I will delineate what I take to be Aquinas's three main sources: 1) Calcidius's *Commentary on the Timaeus* and its 12th century commentators (in turn based on certain texts in Aristotle); 2) Neoplatonism, most notably Proclus and Scotus Erigena; and 3) Greek geometry, filtered through Aristotle. I will in the process describe how these sources would most likely have been transmitted to Aquinas—Calcidius through 12th century physical texts and commentaries on Boethius, reiterated in Bonaventure and Albert; Greek geometrical method through Aristotle and Albert the Great; and Proclus through Pseudo-Dionysius, Erigena, and again, Albert the Great. I contend that

from Scotus Erigena where it clearly *follows* composition. See especially pp. 305-307, 308-309. I am indebted to Régis for locating these and other mentions of *resolutio* by Boethius and Albert the Great. Cf. Isaac's account of resolution in Aquinas which attempts to get around differences in the descriptions of resolution by arguing that there are two resolutions of the same type, resolutions of judgment which seem to differ only in producing varying degrees of certainty. See J. Isaac, "La Notion de Dialectique chez Saint Thomas," *Revue des sciences philosophiques et théologiques* 34 (1950), pp. 486-493.

¹⁹ Aertsen, p. 408. I find Aertsen's interpretation of the text in the commentary on Boethius's *De Trinitate* (q. 6, a. 3, sol. c) which distinguishes between whether the simpler, more universal principles reached by resolution are intrinsic (*secundum rationem*) or extrinsic causes (*secundum rem*) helpful. However, I argue below that these two kinds of resolution are different versions of only one of the types of analysis I will discuss here, Neoplatonic analysis. Aertsen, perhaps because concerned with the method of metaphysics, does not discuss any of the passages that articulate the other two senses which I have found in the Thomistic corpus. See also L. Oeing-Hanhoff, "Die Methoden der Metaphysik im Mittelalter," in *Die Metaphysik im Mittelalter, Ihr Ursprung und ihre Bedeutung* (Berlin, 1963), pp. 71-91, to whom Aertsen is primarily responding. Oeing-Hanhoff argues for two types of resolution in Aquinas, "conceptual" and "natural" resolution, corresponding to resolution *secundum rationem* and *secundum rem*. Aertsen objects to the association of "conceptual" analysis (*begriffs-analyse*) with *resolutio secundum rationem* because he thinks it implies that the categories resulting from this analysis are merely logical and not real (Aertsen, pp. 412-414).

Calcidius, Proclus, and Greek geometry are the main sources for Aquinas not so much because they would have been his immediate sources, as because they are the originators (or at least the clearest proponents) of these distinct senses of analysis as a technical term describing a path of reasoning which reappear in Aquinas. Though there are similar uses in Aristotle, I do not take Aquinas's debt to be mainly or directly to Aristotle because such an appeal would not explain Aquinas's more systematically technical use of analysis, nor the more sharply different versions of analysis which occur in the long tradition of analysis and in Aquinas's text but not in Aristotle.

One might think that there is some pattern of change discernible from a chronological consideration of Aquinas's works for the diverse uses of analysis. But even a cursory juxtaposition of senses and texts reveals that certain senses are not restricted to certain periods of Aquinas's work. The Neoplatonic sense appears in the early exposition of Boethius's *De Trinitate* (1258-1259), in *De Veritate* (1256-1259), and the later *Summa Theologiae* (1268-1272) and *Commentary on the Divine Names* (1265-67); the Calcidian/Aristotelian sense is found in the later commentaries on the *Metaphysics* and on the *Politics* (1269-1272), and in the *Compendium Theologiae* (1269-1273); lastly, the geometrical sense occurs in both the *Commentary on the Nicomachean Ethics* (1271) and the *Summa Theologiae*.²⁰ Thus all three senses seem to have been retained until the end of Aquinas's career. If there is any pattern here, it seems rather to be that Aquinas was more influenced by the language and metaphysical and noetic assumptions of the texts on which he was commenting; he gives strongly Neoplatonic descriptions of analysis commenting on Boethius and Dionysius, and strongly Aristotelian/Calcidian accounts while commenting on Aristotle. Notwithstanding this, however, all three senses occur in Aquinas's autonomous works.

²⁰ These dates are taken from James Weisheipl, O.P., *Friar Thomas d'Aquino: His Life, Thought, and Work* (Garden City, N.Y.: Doubleday, 1974), pp. 355-405.

Since I do not, however, take Aquinas's account to be merely syncretistic, I want to argue, secondly, that what ties the different processes together for him is more than the term, or even that in some vague sense the different traditions all describe resolution as movement from simple to complex or "last" to "first."²¹ While there seem to be no grounds for associating different senses with different periods in Aquinas's work, there is a coherent way to understand the apparent inconsistency in Aquinas's texts. I want to suggest, first, that the different uses Aquinas makes of *resolutio* are each different specifications of the nature of human reason as discursive designed for distinct contexts. But each type reiterates this discursive and dialectical structure, beginning from and returning to a "starting-point" known incompletely and confusedly at first, and returned to with more distinct and complete knowledge. Secondly, I will argue that behind this rather loose commonality, the various types are ordered in terms of the type of discourse with which they are associated, practical or theoretical, physical or metaphysical, and the ontological structure they uncover and imply.

I. Aristotle and Calcidius: *Resolutio* as Division

The first sense of resolution as a kind of division or reduction is derived most purely from Calcidius's *Commentary on the Timaeus*, which in turn (and less purely) seems to be derived from Aristotle. Let me begin with Calcidius and then proceed to Aristotle and Aquinas. Calcidius's clearest account of resolution occurs during his discussion of the methods or theories which will bring us to a discovery of principles. He writes,

If, by means of our intellect, we wish to take away these qualities and quantities, these shapes and figures, and then consider what keeps all these things inseparably together and contains them, we shall find that there is nothing else than that which we are looking for, i.e., matter, and herewith we have found the material principle. This then is one of the two possible methods of arguing, called *resolutio*.²²

²¹ Cf. Dolan, p. 9, and Aertsen, p. 408.

²² "Si ergo has qualitates et quantitates, etiam formas figurasque volumus

The opposite movement, *compositio*, which "follows *resolutio* as union follows separation," works by reconstructing the object, by adding back in, if you will, the genera, qualities, and forms which have been separated from it.²³

This type of resolution is mentioned by Alexander of Aphrodisias and Ammonius commenting on the *Prior Analytics*; these two commentators, like others, insert a discussion of "analysis" into their introduction to the *Analytics* under the rubric of explaining Aristotle's titles to the two *Analytics* (an explanation Aristotle himself never gives).²⁴ Among several senses, they describe an *analysis* (which Ammonius calls *physiological analysis*) of complex living beings into the elements and into matter and form.²⁵ The same process, I think, reappears in Thierry of Chartres and Herman of Carinthia's *De Essentiis* to describe a *physical* process analogous to reason's taking away of forms until one arrives at matter; Thierry, commenting on Boethius's *De Trinitate*, describes resolution as arriving at matter, and com-

ratione animi separare, tum demum deliberare, quid sit illud, quod haec omnia inseparabiliter adhaerens complexumque contineat, inveniemus nihil aliud esse quam id quod quaerimus, silvam; inventa igitur est origo silvestris. Et hoc quidem est unum duarum probationum genus, quod resolutio dicitur." Calcidius, *Timaecus a Calcidio translatus commentarioque instructus*, eds. W. J. Verdenius and J. H. Waszink, in *Plato latinus*, vol. IV (London & Leiden: Warburg Institute and E. J. Brill, 1962), sec. 303, p. 305; translated by J. C. M. Van Winden, O.F.M. in *Calcidius on Matter: His Doctrine and Sources* (Leiden: E. J. Brill, 1959), p. 132.

²³ Calcidius, *In Tim*, sec. 304; eds. Verdenius and Waszink, p. 305; trans. Van Winden, p. 134.

²⁴ Aristotle does use analysis in reference to the titles of the *Analytics* but without further explanation. On the explanations offered by Boethius, Albert the Great, and Thomas for the title of the *Analytics*, see below nn. 70-71.

²⁵ Cf. Alexander, *In Anal Pr*, p. 7, ll. 17-20: "alla kai ho ta suntheta sômata anagôn eis ta, hapla sômata analusei chrêtai kai hô tôn haplôn hekaston eis ta, ex hôn autois to einai, hoper estin hulê kai eidos, analuei"; Ammonius, *In Anal Pr*, p. 5, ll. 14-19: "estin de kai para tois phusiologois synthesis kai analisis, . . . analisis de kath' hên apo tôn sunthetôn epi ta hapla erchontai, oion ho anthrôpos ek tôn tessarôn chumôn, oi tetra chumoi ek tôn tessarôn stoicheiôn." Oeing-Hanhoff refers to this as "natural analysis" ("Analyse/Synthese," p. 247).

position arriving at God and form.²⁶ *De Essentiis* describes resolution as follows: "Every resolution of a composite thing is a resolution into mixtures and finally of the mixtures into the four general principles [i.e., the elements], which, because they are simple, cannot be resolved further."²⁷

Explaining that it is very difficult to come to a clear conception of matter since matter *per se* does not exist, Calcidius states that in order to arrive at such a conception. ". . . one eliminates all bodies which, in the womb of matter, are formed in a rich variety by *resolutio* from one to another. . . ." ²⁸ Even though Calcidius is describing the same *rational* process of elimination he calls resolution elsewhere, here he uses *resolutio* to describe the *physical* transformation of one body or element into another, the same process for which the related term, *dissolutio*, is sometimes substituted in 12th century texts.²⁹ Both the easy shifting from *resolutio* to *dissolutio* and a strongly Calcidian description of analysis also occurs in Bonaventure. Bonaventure describes two ways in which a thing may be corrupted: "by *dissolution*, or

²⁶ Thierry of Chartres, *Commentum super Boethii librum De Trinitate II*, in *Commentaries on Boethius by Thierry of Chartres and His School*, ed. Nikolaus M. Häring (Toronto: Pontifical Institute of Mediaeval Studies, 1971), sec. 23, p. 75. Thierry writes, "Per resolutionem invenitur materia, per compositionem vero Deus et forma."

²⁷ "Omnis autem compositi resolutio in commixtiones, commixtionum demum in generalia .iiii. principia, que, quoniam simplicia sunt, ulterius resolvi non possunt." Herman of Carinthia, *De Essentiis*, ed. and trans. Charles Burnett (Leiden: E. J. Brill, 1982), p. 60vD.

²⁸ ". . . hoc est ut universis corporibus, quae intra gremium silvae varie formantur mutua ex alio in aliud *resolutione*, singillatim adeptis. . . ." Calcidius, *In Tim*, sec. 274b; eds. Verdenius and Waszink, p. 279; ed. Van Winden, p. 49. Rather than use Van Winden's translation of *resolutio* as "transition," I have retained the Latin *resolutio*.

²⁹ See, for example, Clarenbald of Arras's *Tractatus super Librum Boethii De Trinitate*, in *Life and Works of Clarenbald of Arras*, ed. Nikolaus Häring, S.A.C. (Toronto: Pontifical Institute of Mediaeval Studies, 1965), sec. 21, p. 93, in which the process of abstracting qualities is described as *dissolutio*. Cf. Clarenbald, *Tractatus super librum Genesis*, also found in Häring, *Commentaries on Boethius by Thierry of Chartres*, sec. 21, p. 235. Here Clarenbald writes, "Quicquid enim est ultimum in *dissolutione*, primum est in compositione."

the separation of the principles of its composition or its parts, and by corruption of the form"; the same passage goes on to describe, in contrast to the corruption of the form, the *resolutio* of an animal into the four elements or of the elements into one another.³⁰ It is an instructive variation since it captures the main force of this kind of resolution as the dissolving of a composite and as closely associated with physics and physical change.

This notion of resolution seems in part to be derived from Aristotle's discussion in the *Metaphysics* (1029a10-15) of the "taking away" (*aphairesis*) of all forms and qualities until one arrives at matter, and later on of the *analysis* of material compounds into their ultimate matter or original constituents (1044a22-25).³¹ I say it is only "in part" derived from these passages in Aristotle for three reasons. First, Aristotle uses the term *analysis* and its derivatives in many contexts; his understanding of it is fluid and non-technical (except when referring to geometrical analysis), showing in these different passages a kinship with each of the three senses.³² Secondly, an examination of the context of these passages in the *Metaphysics* shows that Aristotle himself rejects this "method" as the way to arrive at metaphysical principles. In this passage Aristotle is in fact outlining the *aporia* that results from attempting to arrive at primary substance by this kind of mental decomposition or "taking

³⁰ Bonaventure, *In Sententiarum Lib. IV*, d. 43, a. 1, q. 4. "Et propter hoc dicunt alii aliter, quod duplex est corruptio: quaedam per *dissolutionem* sive separationem *principiorum componentium* sive partium; quaedam per *corruptionem formae*. . . . Certum est enim, quod forma carnis humanae *corrumpitur*, generatur inde vermis et serpens; et sicut potest corrumpi in carnem serpentis vel alterius animalis, sic *resolvi* potest, sicut et illus animal, etiam in quatuor elementa, et unumquodque elementorum corrumpi in aliud, et ita corrumpuntur formae mixti et elementi." Cf. Bonaventure, *In Sententiarum Lib. II*, d. 8, dubia 3; d. 21, a. 1, q. 3.

³¹ Cf. Stephen Gersch, *Middle Platonism and Neo-Platonism: The Latin Tradition*, 2 vols. (Notre Dame: University of Notre Dame Press, 1986), I, p. 438, n. 70.

³² For a very thorough and persuasive account of the richness and fluidity of Aristotle's uses of analysis, see the forthcoming book by Patrick Byrne, *Analysis and Science in Aristotle*, especially chapter one which examines many of these passages.

away" of forms until one reaches matter. The paradox that would result, Aristotle argues, is that the substance of a thing would be itself completely undetermined and incapable of separate existence (1028b35-1029a30).³³ And even though analysis as division or decomposition is used without such qualifications in Aristotle, these uses occur in the context of physical and, even more specifically, elemental change, not change in more complex, animate beings.³⁴

Though I cannot fully defend this here, it seems to me that in the context of Aristotle's larger theories of physical change and metaphysical principles, analysis as decomposition or division is rejected as the path to ultimate principles and explanations; this kind of analysis is the sort offered by the ancient physicists who arrived at the various elements as the ultimate principle of things, views Aristotle consistently rejects, both as physical and metaphysical theories. This, of course, is the ultimate direction of Aristotle's search for principles in books seven and eight of the *Metaphysics*. After abandoning matter as the primary substance, Aristotle continues his search for substance and principles, by examining form and the "parts" of form which are contained in the definition. The material principles, Aristotle argues, are that into which the concrete thing is "analyzed" or "resolved," but only the parts of the form are included in the definition (1034b20-1035b2). Further, returning in book eight to the issue of parts and definition, Aristotle argues that these principles, form and matter, are not really "parts" because they form a real unity in the concrete thing, not the unity of a mere heap (1045a5-1045b7). Calcidius, however, extracts the notion of analysis or resolution into material parts and elements from Aristotle and pairs it with composition, a process which "reconstructs" the complex out of its parts.

³³ Aquinas makes an even stronger argument for the same conclusion on the basis of our inability to understand matter by trying to arrive at it in this fashion. See *De Substantiis Separatis*, c. 6.

³⁴ See for example, *Meteorology*, 339a36-b2; *On the Cosmos*, 394b17-18; *On the Generation of Animals*, 724b27-28 and 726b25-29. I am indebted to Patrick Byrne for these passages. See his *Analysis and Science in Aristotle*, ch. 1.

The blurring of the distinction between Aristotle's more complex use of analysis and Calcidius's literal interpretation of it is evident in some of Aquinas's uses of analysis in this sense. On the one hand, the descriptions of *resolutio* in Aquinas which most closely resemble those of Calcidius occur in his commentaries on Aristotle and Aquinas attributes this notion of resolution/analysis to Aristotle. On the other hand, the passages Aquinas explains and refers to in Aristotle do not exactly articulate this sense of analysis. Both these elements are present in a passage commenting on Aristotle's *Metaphysics*. Noting the difficulty of knowing whole and part simultaneously, Aquinas describes two ways of arriving at truth, the first of which is resolution "by which we go from what is complex to what is simple or from a whole to a part, as it is said in Book I of the *Physics* that the first objects of our knowledge are confused wholes."³⁵ Aquinas then describes a second, complementary path of composition, by which we move from simple parts to complex wholes. First, Aquinas is describing the breakdown of a whole into its actual parts, while Aristotle in the opening of the *Physics* explains that moving from "confused wholes" is like the process of specifying and clarifying our perceptions (184a25). For example, Aristotle explains, children first call all men "father" or all women "mother" and later they learn to distinguish individuals (184b13-16). This process seems to be different from Calcidius's notion of analysis as the stripping away of forms to arrive at matter. First, Aristotle does not call this process "analysis," and he clearly has in mind the movement from *general* to *particular*, not literally that from *whole* to *part* or from form to elements and matter. Secondly, Aquinas adds what we do not find anywhere in Aristotle, the notion of a complementary process of recomposition, which seems to be Calcidius's contribution.

³⁵ "Est autem duplex via procedendi ad cognitionem veritatis. Una quidem per modum resolutionis, secundum quam procedimus a compositis ad simplicia, et a toto ad partem, sicut dicitur in primo *Physicorum*, quod confusa sunt prius nobis nota." In *Meta*, II, lec. 1. Cf. Aristotle's *Physics*, I, 1, 184a22-b10.

Perhaps the most striking passage in which Aquinas takes his source to be Aristotle but in which he articulates a Calcidian sense of analysis is in the opening *lectio* on the *Politics*. Here Aquinas elaborates Aristotle's claim that governments really differ in kind:

Just as in other things in order to know the whole, it is necessary to divide the composite until one arrives at incomposite things, i.e., until one arrives at indivisibles which are the smallest parts of the whole: for example, in order to know sentences, it is necessary to divide until [one arrives] at letters, and to know natural, mixed bodies, it is necessary to divide them until [one arrives] at the elements.³⁶

So also, then, Aquinas continues, in political science one must divide the state into the basic units of which it is composed, an analysis which will reveal the differences between one constitution and another. This process of dividing a composite until one reaches its indivisible elements Aquinas calls *resolutio* and the "first work" necessary for knowledge of composite things; it is followed by the *via compositionis*, in which "from indivisible principles already known we judge of those things which are caused by the principles."³⁷ Thus "composition" follows resolution in this sense, which in light of the simple components/principles we now understand the complex as complex. This analogy between analysis and the breakdown of sentences into words and letters is not used by Aristotle, but is by his commentators, Alexander and Ammonius, and, again, it makes of analysis a

³⁶ "Quod sicut in aliis rebus ad cognitionem totius necesse est dividere compositum usque ad incompressa, id est usque ad indivisibilia quae sunt minime partes totius: puta ad cognoscendum orationem, necesse est dividere usque ad litteras, et ad cognoscendum corpus naturale mixtum, necesse est dividere usque ad elementa." In *Pol* I, lec. 1. Cf. Alexander of Aphrodisias's example of the analysis of a *logos* into syllables and letters (Alexander, In *Anal Pr*, p. 7; 11. 20-22) and Ammonius's example of analysis of a body into its elements (Ammonius, In *Anal Pr*, p. 5; 11. 14-19).

³⁷ My emphasis. "Ad cognitionem compositorum primo opus est via *resolutionis*, ut scilicet dividamus compositum usque ad individua; postmodum vero necessaria est via *compositionis*, ut ex principiis indivisibilibus iam notis diuidemus de rebus quae ex principiis causantur." In *Pol* I, lec. 1.

literal division or decomposition, a notion of analysis which has no clear and unambiguous parallels in Aristotle. Further, the coupling of resolution with recomposition is never found in Aristotle, but only in Calcidius and in some of the Greek commentators on Aristotle; hence, there must be a source additional to Aristotle himself.

Though the issue of whether Aristotle or Calcidius is the true "parent" of this notion of analysis in Aquinas is complicated, I would like to put forward the following compromise answer. The formulae Aquinas uses to describe this sort of resolution (the examples, and coupling resolution with composition) are clearly indebted not directly to Aristotle but to Calcidius (or to someone who read him, or someone whom Calcidius read), but the way in which Aquinas understands these formulae owes more to Aristotle. This follows, I think, from the passage in Aristotle with which Aquinas associates this type of analysis, the opening of the *Physics*. The opening chapter of the *Physics* introduces Aristotle's search for the "elements and principles" which will explain nature and, more specifically, change (184a22-184b14). Nature and change are the "confused wholes" which Aristotle will bring into focus by specifying their elements/principles, which turn out to be matter, form, and privation. Aristotle is engaged in intellectual analysis to arrive at principles which are not physical parts into which a thing can be actually divided, but which are nonetheless constitutive of a thing's nature; this process does not, as it does for Calcidius, follow the steps of physical dissolution.

Aquinas's analogies for this process are physical dissolution or literal division, but his meaning seems to be broader, and to apply to Aristotle's search for principles, in which one is involved in conceptual analysis rather than a literal reduction to elements or components. That Aquinas grasps this broader notion of this type of resolution is clear from his use of resolution at times as the equivalent of abstraction. In the *Summa Theologiae*, Aquinas describes the process of abstraction, whereby the intellect can ascend to a higher level of understanding than the senses which

cannot sense anything but the individual, concrete object, as involving the *resolution* of the concrete thing into form and matter: "For while [the intellect] knows the thing as having a form in matter, it nonetheless resolves the composite into these [form and matter], and considers this form in itself."³⁸ Further equating abstraction as the grasp of the *form* with resolution, Aquinas continues, our intellects "apprehend the concrete form and concrete *esse* by abstraction, by a kind of *resolution*."³⁹ Thus Aquinas holds the view that the reasoning process is the same in structure, whether the components one reaches by this type of analysis are or can be actually distinct (like material parts or elements) or are real but not independent (like matter and form; species and difference).⁴⁰

Whether this breakdown of a complex is literal or conceptual, this sense of *resolutio* shares two elements with the Calcidian/Aristotelian account—one metaphysical, one epistemological—which, we will see below, are not present in other accounts of resolution in Aquinas. First, the examples used to illustrate the method of resolution Aristotle will follow—the breakdown of a sentence into letters and a body into elements—manifest the process as a *division* of a whole into its constitutive parts. Thus, metaphysically one is moving "down" the ontological ladder to-

³⁸ *ST* I, q. 12, a. 4, ad 3. Cf. *Comp Theol*, c. 62. "Una quidem secundum abstractionem formae a materia, in qua quidem proceditur ab eo quod formalius est ad id quod est materialius: nam id quod est primum subiectum ultimo remanet, ultima vero forma primo removetur." Aquinas continues with a second sense of resolution, which he describes as "the abstraction of universal from particular, which is in a way the opposite in order from the first, for first the material, individuating conditions are removed, so that one arrives at that which is common [Alia vero resolutio est secundum abstractionem universalis a particulari, quae quodam modo contrario ordine se habet: nam prius removetur conditiones materiales individuantes, ut accipiatur quod commune est]." See also Dolan's discussion of these passages, pp. 21-31. Cf. *SCG* II, c. 100 n. 4.

³⁹ *ST* I, q. 12, a. 4, ad 3.

⁴⁰ As we will see below, Aquinas distinguishes between resolution *secundum rem* and *secundum rationem* within which what I will call the second sense of resolution, the Neoplatonic sense. See *Exp de Trin*, q. 6, a. 1. What I am essentially arguing for here is that he implicitly makes the same distinction for this sense of resolution as well.

ward the parts of a complex whole, whether those "parts" are literal parts, like letters in relation to words, or conceptual parts, like form and matter. And for Aquinas, even when resolution *qua* abstraction arrives at form rather than matter or material parts or elements, it is still a breakdown of what is "higher" ontologically into what is lower because all created forms are composed with matter and/or *esse* and are the incomplete "parts" of a more complete, subsistent whole.⁴¹ At the farthest remove from *literal* division, this sense stretches to include the movement from general to specific, i.e., the process described at the opening of the *Physics* as focussing on and specifying "confused wholes," which is still a kind of movement down the conceptual ladder. Secondly, *resolutio* is clearly viewed as a *preliminary* movement of reason, a first sorting out of a complex and indistinctly known whole. As such it is not an end in itself but a preparation for the rebuilding, the *compositio*, of the whole out of its parts.

II. Neoplatonism and *Resolutio* as Reversion: *Resolutio* Opposed to Division

When we move to another set of passages describing the movements of reason as resolution and composition, we notice that this second sense is the *opposite* of the first in terms of its implications for metaphysics *and* knowledge. Unlike the first sense, in the order of knowing this resolution *follows* its complement, *compositio*, and its movement in metaphysical terms is not *down* the ladder of being toward simple components, material or formal, but rather *upward* toward higher, more complete, and more general causes and principles.

The peculiarities of this sense of *resolutio* are peculiarities which, I think, flow from its connection with a Neoplatonic metaphysics and epistemology. In Proclus and Scotus Erigena *resolutio* takes its place along with the other methods or movements of reason as imitating the movement of being to and from the

⁴¹ On the fundamental incompleteness of all simple "parts" of created beings see I *Sent* d. 8, q. 5, a. 1 and *SCG* I, c. 17.

One. In the *Platonic Theology* Proclus introduces the dialectical method of *resolution* (*analysis*) as follows: "Our dialectic makes great use of division and *analysis* as the principal means of knowledge and as *imitating* the *procession* of beings from the One and their *reversion* back again. . . ." ⁴² What is here formalized by Proclus and, as we will see below, Erigena, seems to draw on Plotinus's less technical description of dialectic as first dividing to reach the forms, then "weaving together" the intelligible universe from these primary genera, and finally *resolving* or *analysing* back to the starting point. ⁴³

Scotus Erigena gives a more complete description of the task of *resolutio* as the return and collection of what has been divided:

There is no rational division, whether it be of essence into genera or of genus into species and individuals or of the whole into its parts . . . or of the universe into those divisions which right reason contemplates therein, that cannot again be brought back again by the same stages through which the division had previously ramified into multiplicity, until it arrive at that One which remains inseparably itself from which that division took its origin. ⁴⁴

⁴² My emphasis. "hê de par' hêmin dialektikê ta men polla *diairesei* chrêtai kai *analusesin* ôs prôtourgois epistêmiais kai *mimoumenais* tèn tôn ontôn *proodon* ek tou henos kai pros auto palin epistrophên." Proclus, *Théologie Platonicienne*, ed. H. D. Saffrey and L. G. Westerink (Paris: Société d'Édition, 1968), vol. I, Bk. I, 9, p. 40. On the relationship between division and procession see A. C. Lloyd, "Procession and Division in Proclus," *Soul and the Structure of Being in Late Neo-Platonism: Syrianus, Proclus and Simplicius*, ed. H. J. Blumenthal and A. C. Lloyd (Liverpool: Liverpool University Press, 1982), pp. 18-45.

⁴³ "Têi diairesei têt Platônos chrômenê men kai eis *diakrisin* tôn *eidôn*, chrômenê de kai eis to ti esti, chrômenê de kai epi ta prôta yenê, kai ta ek toutôn noerôs plekousa, heôs an dielthêi pan to noêton, kai *anapalin analuoussa*, eis ho an ep' archên elthêi. . . ." Plotinus, *Enneads*, I, 3, 4; ed. Loeb, vol. I, p. 158, ll. 12-17.

⁴⁴ "Nulla enim rationabilis divisio est sive essentiae in genera sive generis in formas et numeros sive totius in partes . . . sive universitatis in ea quae vera ratio in ipsa contemplatur quae non iterum possit redigi per eosdem gradus per quos divisio prius fuerat multiplicata donec perveniat ad illud unum inseparabiliter in se ipso manens ex quo ipsa divisio primordium sumpsit." Iohannis Scotti Eriugenae, *Periphyseon*, ed. and trans. I. A. Sheldon-Williams, 4 vols. (Dublin: The Dublin Institute for Advanced Studies, 1968), II, 526a-b. Cf. Erigena's *Expositiones super hierarchiam caelestem S. Dionysii*, in *Patri-*

Since *resolutio* parallels the return of diverse and complex things into their higher and simpler causes and ultimately into the One, its movement is from what is more particular, specific, and complex, to the universal, generic, and simple. It is in one sense like the first type of resolution in that it moves from complex to simple; however, the metaphysical character of that simplicity is different in each case; one is the simplicity of parts, the other the simplicity of seamless unities. What is at work here is really a difference over the nature of metaphysical principles. For the Neoplatonists, A. C. Lloyd explains, "[a principle] must not be deficient in any respect . . . consequently it must not be *in a subject* . . . , nor (rather surprisingly) [can it] be an *element* or *composed of elements*, since elements require each other as well as the

logia Latina, vol. 122, VII, col. 184C12-185A3: "Duae quippe partes sunt dialecticae disciplinae, quarum una *diairetikê*, altera *analutikê* nuncupatur. Et *diairetikê* quidem divisionis vim possidet; dividit namque maximorum generum unitatem a summo usque deorsum, donec ad individuas species perveniat, inque eis divisiones terminum ponat; *analutikê* vero ex adverso sibi positae partis divisiones ab individuis sursum versus incipiens, perque eosdem gradus quibus illa descendit, ascendens cumvolvitur et colligit, eosdemque in unitatem maximorum generum reducit, ideoque reductive dicitur et reductiva." For further discussion of the dialectical methods in Erigena, one of which is *resolutio*, see Giulio d'Onofrio, "'Disputandi Disciplina': Procédés dialectiques et 'logica vetus' dans le langage philosophique de Jean Scot," *Jean Scot: Écrivain*, ed. G.-H. Allard (Montreal: Éditions Bellarmin, 1986), pp. 229-263, and Jean Trouillard, "La Notion d'analyse chez Érigène," *Jean Scot Érigène et l'histoire de la philosophie* (Paris: R. Roques, 1977), pp. 349-356. It is worth noting, as a measure of just how intertwined these various traditions become, that Erigena himself does not always keep them straight. In Erigena's *Versio Maximii* Sheldon-Williams relates that *resolutio* is connected to processio, a kind of Neo-Platonic *division*, as the overflowing from the One which is also its fragmentation, rather than with reversion, as it is in the *Periphyseon* and Dionysius commentary; Erigena writes, "divina in omnia processio *analutikê*, dicitur, hoc est resolutio; reversio vero *theosis*, hoc est deificatio." (PL 122, 1195C6-1196A2). See Sheldon-Williams's translation of the *Periphyseon*, vol. II, nn. 11, 15, pp. 214-215. Though Sheldon-Williams refers only to "different derivations" of *analysis* without explanation, Erigena seems to be aware at least of the geometrical sense of analysis, for he distinguishes between *analysis* and *analutikê*, the former "used in connection with the solution of set problems," the latter "used in connection with the return of the division of the forms to the origin of that division." Erigena, *Periphyseon*, trans. Sheldon-Williams, II, 526B6-8.

whole; finally it must *revert to itself* and consequently be *separable*.”⁴⁵ Since resolution moves to principles which are *not* elements but which are simple, for Proclus the direction of this movement, like that of reversion, is *upward* toward higher and simpler causes, unlike Aristotelian/Calcidian *resolutio*, which moves *down* the ontological ladder from the complex to its components because it envisions those elements as principles.

Further, because in Neoplatonism being and intelligibility originate from and reside in the simpler causes and principles, for Proclus and Erigena the overall pattern of reason must follow the same path, originating from and returning to an understanding of those simpler causes.⁴⁶ Hence, as Erigena’s description of *resolutio* as “returning again” to the One makes clear, within such a context not only does *resolutio* mirror the return to the One, it also must *follow* its complement, just as reversion follows procession. Again in contrast to Calcidian resolution, here the order of being and knowing are the same; while in Calcidian resolution simples are at some level discovered in their complexes, in Neoplatonic resolution the simpler, higher causes can only be returned to with greater knowledge, and never discovered absolutely from that which derives from and returns to them. The overall picture of the movement of reason in Calcidius is from complexes, something “first” only *quoad nos*, to that which is first *per se*, i.e., simples, and back again to complexes; in the Neoplatonics it is from what is first both *quoad nos* and *per se* to lower, complex objects, returning to simpler and higher causes.

⁴⁵ My emphasis. A. C. Lloyd, “The Later Neoplatonists,” in *The Cambridge History of Later Greek and Early Medieval Philosophy* (Cambridge: Cambridge University Press, 1967), p. 308. Lloyd is here describing what he calls “the formal requirements” of principles put together by Damascius in *Dubitationes et solutiones de primis principiis*, ed. C. A. Ruelle, 2 vols. (Paris, 1889), I, pp. 19-21, 23. What surprises me is that Lloyd is “surprised” at the Neoplatonic rejection of elemental principles.

⁴⁶ Cf. Aquinas’s agreement as he comments on Pseudo-Dionysius: “Inquisitio enim rationis ad simplicem intelligentiam veritatis terminatur, sicut incipit a simplici intelligentia veritatis, quae consideratur in primis principiis.” *In Div Nom*, c. 7, lec. 2.

In his commentary on Euclid's *Elements* Proclus applies this emanative schema to the "unfolding" of the mathematical sciences from *nous*. The "elements" of geometry are, for Proclus, "those theorems whose understanding *leads* to the knowledge of the rest and by which difficulties in them are *resolved*."⁴⁷ The task of Euclid's text, then, Proclus continues, is "to select and arrange properly the elements out of which all other matters are produced and into which they can be resolved."⁴⁸ Here Proclus seems to be thinking of the "elements" not as the parts out of which more complex figures are composed but as the simpler sources from which the complex figures "proceed." For Proclus, the line is simpler than the plane; the genus, simpler than the species; common notions and general principles simpler than more determinate notions and propositions.⁴⁹ These simples are also—and this is the unusual part—in some sense "causes" of their more complex counterparts. All the movements return ultimately to the One, which is both the simplest and highest cause. For Proclus the movement of reason mirrors the order of being, i.e., its conclusions flow from and return to a single most simple principle, the One. This structure organizes Proclus's *Elements* of

⁴⁷ My emphasis. "Stoicheia men oun eponomazontai, hôn hê theôria dukneitai pros tèn tòn allôn epistêmên, kai aph' hôn paraginetai hêmin tòn en autois aporôn hê dialusis." *Commentary on the First Book of Euclid's Elements*, trans. Glenn R. Morrow (Princeton, NJ: Princeton University Press, 1970), Prologue, Part II, p. 59. Greek text: *Procli Diadochi in primum Euclidis Elementorum librum commentarii ex recognitione Godofredi Friedlein* (Leipzig, 1873), p. 72. Though Proclus's term here is not *analysis* but the related *dialusis*, Proclus uses analysis in exactly the same sense; see the passage quoted below, n. 48.

⁴⁸ "kai to eklexasthai kai taxai kata tropon ta stoicheia kath' hekastên epistêmên, aph' hôn ta alla proagetai panta kai eis ha ta alla analuetai." Proclus, *On Euclid*; trans. Morrow, p. 60; ed. Friedlein, p. 73.

⁴⁹ On the relationship of genus to species, see Proclus, *Procli Commentarium in Platonis Parmenidem*, ed. Victor Cousin [Hildesheim: Georg Olms, col. 981; English version, Proclus, *Commentary on Plato's Parmenides*, trans. Glenn R. Morrow and John M. Dillon (Princeton: Princeton University Press, 1987), p. 335]. On the relationship of general notions and principles to more determinate ones, see Proclus, *Plat Theo*, I, 10, ed. cit., n. 42.

Theology and the *Liber de Causis* based on it.⁵⁰ It would have made its way to Aquinas not only through the *Elements of Theology* and the *Liber de Causis* but indirectly through Pseudo-Dionysius and Erigena's commentaries on Dionysius, which accompanied the Dionysian corpus in the 12th and 13th centuries, and through Albert's lectures on Dionysius which Aquinas is known to have heard.⁵¹

The Latin term *resolutio* occurs in a number of Albert's works, but it occurs most frequently in his Dionysian commentaries, especially on the *Divine Names*. What is most interesting about these passages is that Albert seems to confront directly (though not quite solve) the conflict between what I have here called the Calcidian and Neoplatonic senses of analysis and between the two notions of simplicity and the principles they imply. Albert raises a series of objections to the "resolution" in the Dionysian text, which arrives not at a single, first principle but rather seems to re-

⁵⁰ For a description of this model of science and its influence on medieval thinkers, see Charles H. Lohr, "The Pseudo-Aristotelian *Liber de Causis* and Latin Theories of Science in the Twelfth and Thirteenth Centuries," in *Pseudo-Aristotle in the Middle Ages: The Theology and Other Texts*, ed. Jill Kraye, W. F. Ryan and C. B. Schmitt (London: Warburg Institute, 1986), pp. 53-62. Cf. A. C. Lloyd, "The Later Neoplatonists," in *The Cambridge History of Later Greek and Early Medieval Philosophy* (Cambridge: Cambridge University Press, 1967), p. 306. W. J. Hankey's "Theology as System and as Science: Proclus and Thomas Aquinas," *Dionysius* 6 (1982), pp. 83-93 argues for many connections between Aquinas's and Proclus's theology, but attributes the structure of emanation and return present in Aquinas's *Summa* as a whole only indirectly to Proclus and more directly to Dionysius, Boethius, and Erigena (pp. 86-88).

⁵¹ See H. F. Dondaine, *Le Corpus dionysien de l'Université de Paris au XIII^e siècle* (Rome, 1953). Dondaine also gives the locations of the six percent of the *Periphyseon* which glossed Erigena's Latin translation of the Dionysian texts. Though the passage from the *Periphyseon* describing analysis quoted above is not among them, Erigena's translations, commentaries, and the 12th century figures influenced by the then banned *Periphyseon* are, I think, sufficient to guarantee Aquinas's familiarity with Erigena. On Erigena's influence, see I. A. Sheldon-Williams's discussion of Erigena in *The Cambridge History of Later Greek and Early Medieval Philosophy*, ed. A. H. Armstrong (London: Cambridge University Press, 1967), pp. 532-533. According to William of Tocco's *Vita s. Thomas*, Thomas read Dionysius's *Divine Names* and Aristotle's *Ethics* with Albert at Cologne. See below, n. 80.

solve to two separate principles.⁵² All resolution, the objections argue, "must be to one, as all multiplicity comes forth from one."⁵³ One objection considers the possibility of resolution to two rather than a single principle: "one can resolve to many principles, for example to *matter and form and other causes*"; however, Albert counters this possible solution by arguing that Dionysius assumes a single process of resolution which retraces the steps of a single *exitus*, a view inconsistent with resolution to multiple principles.⁵⁴

Later in the commentary, Albert articulates a whole series of objections drawn from Aristotle's *Metaphysics*, introducing the view that the single first principle to which we must resolve is matter; Albert's response distinguishes between different kinds of first principles, one passive (matter) and another active.⁵⁵ The implication, though not explicitly drawn, is that there must be two resolutions as well to these different kinds of principles. This implication becomes explicit later in the text, which distinguishes between "the resolution of composite things in the simple parts of which they are composed" and "resolution into the more universal."⁵⁶

⁵² Alberti Magni, *Super Dionysium de Divinibus Nominibus, Opera Omnia*, vol. 37, pt. 1. (Ashendorff, 1972), c. 4, p. 230, ll. 21-71.

⁵³ Ibid., ll. 33-34.

⁵⁴ Ibid., ll. 36-40: "Si dicatur, quod aliquid potest resolvi in plura principia sicut materiam et formam et alias causas, contra: non est unius modi resolutio in diversas causas, sicut nec unus exitus ab eis; sed ipse intendit unius modi resolutionem; ergo non debuit reducere in duo." Albert does not respond directly to this objection and so never confronts the real opposition between the different kinds of resolution his objections describe; instead he refers the reader to another response as sufficient: "quod resolutio non est nisi in unum sicut in ultimum, potest tamen esse in plura citra ultimum, ita tamen quod etiam illa non sint unius ordinis, sed unum ordinetur ad alterum, et sic est in proposito" (Albert, *De Div Nom.*, p. 231, ll. 28-33).

⁵⁵ Albert, *De Div Nom.*, p. 235, ll. 13-60.

⁵⁶ Ibid., c. 5, p. 314, ll. 65-77. "quod esse non sumitur hic pro actu essentiae in supposito, sed pro ipso ente, in quo stat resolutio intellectus. Quamvis enim resolutio compositi in simplex stet in partes componentes, tamen resolutio in magis universale stat in eo quod praedicatur. Illud autem quod praedicatur, est forma totius hoc modo significata; forma enim partis non praedicatur, ut anima, sed tantum forma totius, ut animal, quod est potentia totius. Omnis

Though there are a number of other relevant passages in Albert, certain things important for understanding Aquinas's use of resolution emerge from those discussed here which are confirmed by those other uses. First, these passages from Albert's *Divine Names* and other Dionysian commentaries confirm the Neoplatonic origin and context for Aquinas's similar uses; the description in the *Divine Names* repeated elsewhere is of resolution as retracing the emanation of all things from the One.⁵⁷ Secondly, Albert seems aware of a competing notion of resolution, i.e., resolution to matter or to matter and form, which he sets up in explicit opposition to the Neoplatonic resolution to the first cause. Thirdly, even when Albert is commenting on Aristotle, his account of resolution, when explaining the title of Aristotle's *Analytics*, for example, is tinged with this Neoplatonic understanding.⁵⁸

Lastly, Albert also raises what becomes an important issue for the assimilation of Neoplatonic resolution into Thomas's metaphysics. The resolution Albert finds reflected in the Dionysian texts is the resolution to a single formal principle, to the *forma*

autem forma significata ut in abstracto significatur per modum formae partis, quia animalitas secundum rationem est partis habentis animalitatem. Animal autem dicit utrumque, et ideo resolutio non stat in essentia, sed in ente, et propter hoc ens est primum."

⁵⁷ Cf. Albert, *De Div Nom*, p. 179, *Super Dionysii Mysticam Theologiam, Opera Omnia*, ed. cit., vol. 37, pt. 2, p. 467; *De Caelesti Hierarchia, Opera Omnia*, ed. Vivès, v. 14, pp. 192-193.

⁵⁸ See, for example, *Liber de Praedicabilibus*, tr. 1, ed. Vivès, v. 1, pp. 4-5, and *Commentary on the Prior Analytics*, tr. 1, c. 1, ed. Vivès, v. 1, pp. 159-160. In the latter, Albert describes the two parts of logic, discovery and judgment, and as Boethius did before him and Aquinas after, associates both the *Analytics* and analysis/resolution with judgment (on Boethius and the association of resolution with the judgmental part of logic, see below, n. 63). He distinguishes between two kinds of analysis/resolution corresponding to the *Prior* and *Posterior Analytics*; the first, found in the *Prior Analytics*, is the resolution of arguments into their principal syllogistic forms; the second is the resolution of the things concluded into their principles and causes. All resolution, Albert writes in this context, "is toward that which is prior by nature, since there is no resolution except of the posterior into the prior, either of the composite into the simple, or of the material into its formal principles." Cf. Albert, *In De Anima*, ed. Aschendorff, vol. 7, pt. 1, Bk. I, Tr. 1, c. 2, p. 29.

universalis, which is not, for Albert or Thomas, identical to the first cause, God.⁵⁹ In other words, Albert quite correctly finds in Dionysius what seems also to be true for Proclus: that these more universal and general principles—being or *esse* in general, the *forma universalis*—to which one resolves are not merely conceptual but are the causes of the *being* of their effects and of their *being known*. J. N. Findlay describes the lack of this distinction in the Neoplatonists as part of “the peculiar logic of Neoplatonism,” which is one in which

substantiality and agency reside in the generic or specific pattern and never in the poor instance, and it is, moreover, a logic in which the hierarchical rise from the more specific to the more generic; though it may lessen determinateness, it also deepens and widens power. The true genus . . . contains all its subordinate species *dunamei* or in power, and holds together in a rich unity what must necessarily fall apart in the species and the instance.⁶⁰

Albert is careful to prevent precisely this identification of the most general conception and the first, efficient cause, between what Albert calls the *forma universalis* and “the first principle of all effects,” i.e., God. As we will see below, Aquinas also distinguishes between them by distinguishing between the order of *extrinsic* and *intrinsic* causes. Following the order of *intrinsic* causes, reason moves up to greater levels of generality but not to greater and higher levels of efficient causality. However, though the two orders of intrinsic (formal and material) and extrinsic (efficient and final) causality are not identical for Aquinas, the

⁵⁹ Albert, *De Div Nom*, c. 4, p. 179, ll. 6-16.

⁶⁰ J. N. Findlay, “The Logical Peculiarities of Neoplatonism,” in *The Structure of Being: A Neoplatonic Approach*, R. Baine Harris, ed. (Albany: SUNY, 1982), pp. 6-7. A. C. Lloyd argues that for Proclus the distinction between the causes of being and of being known would not arise; it is, according to Lloyd, the materialism of the Stoics which raises the question about the ontological status of non-empirical principles, placing them in the realm of the conceptual *rather than* the real, a move which Proclus realizes is “contrary to the spirit of Platonism,” when he (Proclus) writes that “the principles are principles *per se* and not through our concepts.” Lloyd, “Later Neoplatonists,” p. 308, quotes Proclus here from the *Commentary on Plato's Parmenides*, VI, 23, ed. Cousin, col. 1054, ll. 27-31.

structure of the path for *reason* as moving "up" to higher levels is the same in both orders.

Despite this important difference to which we will return below, Aquinas, like Albert, in a way clearly indebted to Proclus and Dionysius, describes the *via resolutionis* as the path of all things returning to their first cause, and the path of reasoning which resolves things into their principles. In the *Commentary on the Divine Names*, Aquinas notes that things strive for the good by a process of resolution, in which "from composition things aim toward the simple, which is found in the highest degree in God."⁶¹ Again, as for Proclus, this ontological process is mirrored in human reasoning, which moves from and returns or *resolves* back to its principles what unfolded from them. In the *Summa* Aquinas writes,

Since movement always proceeds from something immovable and ends in something at rest, hence, it is that human reasoning, according to the path of inquiry or discovery, proceeds from certain things simply understood, which are the first principles; and on the other hand, according to the path of judgment returns by *resolutio* to first principles, in which it examines what it has discovered.⁶²

Here, as opposed to the Calcidian/Aristotelian sense of resolution we have seen elsewhere in Aquinas, *compositio* is linked with the path of *discovery* and *resolutio* with that of the *judgment* that follows on and confirms discovery.⁶³ As Aquinas remarks more

⁶¹ *De Div Nom*, c. I, 1. 2, n. 51. It is noteworthy that Aquinas argues that things tend toward the good "by the way of composition" as well; the "composition" he goes on to describe seems to be the composition which is the counterpart of Calcidian/Aristotelian analysis; this process "moves from multiplicity to unity, until from many one is made."

⁶² "Et quia motus semper ab immobili procedit, et ad aliquid quietum terminatur; inde est quod ratiocinatio humana, secundum viam inquisitionis vel inventionis, procedit a quibusdam simpliciter intellectis, quae sunt prima principia; et rursus in via iudicii, resolvendo redit ad prima principia, ad quae inventa examinat." *ST I*, q. 79, a. 8.

⁶³ The association of judgment and discovery, the two parts of logic given by Cicero, with resolution and composition, respectively, seems to originate with Boethius's *In Ciceronis Topica*, Bk. I, PL 64, col. 1074A-B; cf. Régis, p. 308. Boethius associates analysis/resolution and judgment with the subject matter of Aristotle's *Analytics*, which he understands as the relationships be-

than once using resolution in this sense, we have *science*, i.e., certain, necessary knowledge, only when we have resolved to first principles;⁶⁴ in the *Summa*, emphasizing the sense in which resolution is the *later* movement of reason, Aquinas writes, "the end of discursion is when the second is seen in the first, by resolving effects into causes; and thus discursion ceases."⁶⁵ Further, the confirmatory movement of *resolutio* is understood to terminate not in simple components, such as the four elements and matter, but rather in higher and more universal causes and general principles.

Thus, in contrast to Calcidian resolution, which involves the breakdown of a complex into its parts and thereby displays its connection to physics, this type of resolution is especially associated with the metaphysical search for and examination of the highest causes and principles. Aquinas's most eloquent description of resolution in this sense occurs in the context of explaining the sense in which metaphysics is both the beginning and the end of reason's journey toward *intellectus* and thus is said to proceed *intellectualiter*. Aquinas writes,

Thus it is clear that rational consideration *ends* in intellectual consideration, following the process of *resolutio*, insofar as reason gathers one simple truth from many things. And conversely, intellectual consideration is the *beginning* of rational thinking, following the process of *compositio* or discovery, in so far as the intellect comprehends a multiplicity in unity.⁶⁶

Here Aquinas depicts the other sciences as originating from the simplicity and unity of metaphysics and metaphysics as gathering

tween propositions and their composition, the analysis of which into propositions and terms allows one to judge arguments. Thus, Boethius seems to explain the title *Analytics* with the Calcidian/Aristotelian notion of analysis as the breakdown into components. See also below, n. 71.

⁶⁴ *In III Sent.*, dist. 23, q. 2, a. 2, sol.i & iii; *QDV*, q. 15, a. 1, ad 4.

⁶⁵ "Terminus vero discursus est, quando secundum videtur in primo, resolutis effectibus in causas: et tunc cessat discursus." *ST I*, q. 14, a. 7.

⁶⁶ My emphasis. "Sic ergo patet quod rationalis consideratio ad intellectualem *terminatur* secundum viam *resolutionis*, in quantum ratio ex multis colligit unam et simplicem veritatem. Et rursum intellectualis consideratio est *principium* rationalis secundum viam *compositionis* vel inventionis, in quantum intellectus in uno multitudinem comprehendit." *Exp de Trin*, q. 6, a. 1, sol. c.

together and unifying their many and diverse conclusions and principles, just as Proclus envisioned the diverse mathematical sciences as emanating from and resolving into a higher and more general science of mathematics. Not only is the movement always "upward," it is always toward principles which are simpler and higher in a peculiarly Neoplatonic sense; the sciences and principles to which one resolves are simpler not because they are parts of some complex whole, as for example meteorology is a part of physics and the elements parts of a body, but rather because they are the higher, more unified, and powerful sources for the diverse and fragmented consequences which flow from them.

As I mentioned above, these higher and more universal principles may, for Aquinas, either be extrinsic causes or intrinsic causes; the movements following these orders end in the separate substances and the properties of being *qua* being, respectively.⁶⁷ This distinction is important because it allows Aquinas to relate and distinguish aspects of metaphysics not clearly distinguished in Aristotle, i.e., metaphysics as natural theology and as ontology.⁶⁸ It also allows Aquinas to absorb this Neoplatonic notion of reason's movement without taking on a metaphysics which does *not* distinguish between the order of intrinsic and extrinsic causality, in which, in other words, the more common or generic is also the more powerful and real. For Aquinas, God, who is being *per se*, and being-in-general are clearly different and are the termini of resolution *secundum rem* and *secundum rationem*, respectively.⁶⁹

⁶⁷ Ibid.

⁶⁸ Cf. Aertsen, pp. 415-416 and Wippel (op. cit., above, n. 11).

⁶⁹ Cf. the criticisms of Cornelio Fabro, "Platonism, Neo-Platonism and Thomism: Convergencies and Divergencies," *New Scholasticism* 44 (1970), pp. 69-100, and John Wippel, "Thomas Aquinas and Participation," in *Studies in Medieval Philosophy*, John Wippel, ed. (Washington, D.C.: The Catholic University of America Press, 1987), pp. 136-137, of the argument of Klaus Kremer's *Die Neoplatonische Seinsphilosophie und ihre Wirkung auf Thomas von Aquin* (Leiden, 1966). Kremer claims that Aquinas does identify God and *esse commune*, despite Aquinas's numerous statements to the contrary. See, for example, *SCG* I, c. 26; *QDP*, q. 7, a. 2, ad 6; *ST* I, q. 3, a. 4, ad 1.

As with the Calcidian sense of analysis, here, it seems, we have a "conceptual" version of the literal sense of this analysis. Just as analysis considered as the literal division into physical parts was transformed by Aquinas, following Aristotle, into an analogous process of analysis into conceptual and formal parts (a process not unlike abstraction), here analysis as following the return of all things to the one is given a less literal, more conceptual counterpart in the resolution to highest principles. One form this type of analysis takes, according to Aquinas, is the analysis or reduction of syllogisms to the first figure, which grounds their validity. In his *Commentary on the Posterior Analytics* Aquinas gives this description of analysis, and then adds, "and since certain judgment concerning effects cannot be achieved unless they are resolved into first principles, this part [of Aristotle's logical writings] is called *Analytics*, i.e., resoluteive."⁷⁰ This is an explanation for the title of Aristotle's two *Analytics* found in some Greek commentators as well as Albert, that the "analysis" of syllogisms consists in "reducing" them to the first figure in virtue of which they are judged to be valid or invalid.⁷¹ Aristotle himself seems to use analysis in this sense, and to equate it with *anagein* which means to "lead up" or "elevate," a Greek verb that seems to capture the sense of analysis as movement "upward" to higher causes and principles.⁷² Further, this logical sense belongs with the Neoplatonic sense, I think, because both are movements of confirmation or judgment rather than discovery—which is what the Calcidian sense of analysis is. The "reduction" of syllogisms to the first figure is just one kind of "judgment"; when the subject is arguments, one "resolves"

⁷⁰ *In Anal Post* I, lec. 1.

⁷¹ On Albert, see above n. 58. On Boethius's explanation, see above n. 63. Cf. Alexander, *In Anal Pr*, p. 7, ll. 25-34, who gives the same explanation and Oeing-Hanhoff ("Analyse/Synthese," p. 233) who attributes this view to Aristotle even though not explicitly found in Aristotle. Aertsen makes of what I have described here as a logical application of Neoplatonic analysis a separate sense of analysis, "judicative analysis" (Aertsen, pp. 407-409).

⁷² See *Prior Analytics* 46b40-47a21 and 50a16-32. I am indebted to Patrick Byrne for supplying these references, and the connection between *analuein* and *anagein*.

to the first principles of argumentation (the first figure), but when the subject is physics or metaphysics, one "resolves" to the first principles of those disciplines.

Hence, resolution *secundum rationem* does not, as Aertsen claims, move in a different *direction* from resolution *secundum rem* and in effect make the former equivalent to Calcidian resolution.⁷³ Even if there are ways of construing both types of resolution to terminate in the same things, i.e., being, matter, form, act, and potency, one would still be arriving at those notions by a different kind of reasoning, i.e., by breaking "down" vs. generalizing "up," and would be thinking about them as related differently to that of which they are principles, as wholes to parts vs. particular to general. Whether following the chain of intrinsic or extrinsic causes, reason is still moving toward what is higher, simpler, and more universal, not downward to parts of some whole. That is, we can resolve to the principle of non-contradiction for propositions, the first figure of the syllogism for arguments, and being and the properties of being, and God and the separate substances within metaphysics. For Aquinas, in all these orders, having *scientia* of something consists not merely in knowing it but rather in knowing it in or *resolving* it into its higher and simpler principles and causes; when we resolve into higher causes and principles not merely relatively but *per se*, i.e., to God, we have not mere *scientia* but rather wisdom.⁷⁴

III. Greek Geometry and *Resolutio* as Opposed to Demonstration

Like the first two senses of resolution, this third sense, described as the method of taking counsel by Aristotle in the *Ethics*,

⁷³ Aertsen, p. 414. Aertsen is arguing against Oeing-Hanhoff when he writes that the distinction between resolution *secundum rem* and *secundum rationem* "is not the distinction between analysis of concepts and natural analysis; it concerns rather the different direction of the discursive movement." I agree with Aertsen that there are two types of analysis/resolution in Aquinas which move in opposite directions but disagree that the distinction in the Boethius commentary between resolution *secundum rem* and *secundum rationem* corresponds to this distinction.

⁷⁴ *QDV*, q. 22, a. 2. Cf. *ST* I-II, q. 57, a. 2; *ST* II-II, q. 9, a. 2; *QDV*, q. 12, a. 1.

is one of a *pair* of movements. Like resolution as the division of a whole, it is *followed by* its complement, also called *compositio* (synthesis); like resolution as reversion or return to the One, this type of resolution involves returning to the end or goal of action. One taking counsel “resolves,” according to Aristotle, by assuming the end to be achieved and reasoning back from this end, considering the various means until one arrives at an action that can be undertaken immediately toward that end (*EN* III, 1112b16-20). This process, Aristotle continues, is analogous to the analysis or resolution of a geometrical construction (*EN* 1112b20-25).⁷⁵ The reference to geometrical constructions links the description of counsel in the *Ethics* to the geometrical method known as analysis. The *locus classicus* for the description of this method is the Greek geometer, Pappus of Alexandria, who, though he lived well after Aristotle, gives the earliest full description we have.⁷⁶ According to Pappus,

[A]nalysis is the way from what is sought—as if it were admitted—through its concomitants [*to akolouthon*] in order to attain something admitted in synthesis. For in analysis we suppose that which is sought to be already done, and we inquire from what it results, and again what is the antecedent of the latter, until we on our backward way light upon something already known and being first in order.⁷⁷

⁷⁵ “ho gar bouleuomenos eoike zêtein kai analuein ton eirêmenon tropon hôsper diagramma . . . kai to eschaton en têi analusei prôton einaien têi genesei.”

⁷⁶ Oeing-Hanhoff dates Pappus in the 3rd century A.D. (p. 234). Cf. Hintikka and Remes, *Method of Analysis*, p. 7.

⁷⁷ “Analysis toinun estin hodos apo tou zêtoumenou hôs homologoumenou dia tôn hexês akolouthôn epi ti homologoumenon sunthesei. En men gar têi analusei to zêtoumenon hôs gegonos hupothermenoi to ex hou touto sumbainei skopoumetha kai palin ekeinou to proêgoumenon, heôs an houtôs anapodizontes katantêsômen eis to tôn êdê ynôpizomenôn hê taxin archês echontôn.” *Pappi Alexandrini Collectionis Quae Supersunt*, ed. Hultsch (Berlin, 1876-1877), vol. II, pp. 634-635; trans. Hintikka and Remes, in *Method of Analysis*, p. 8. I have used Hintikka and Remes’s translation because of their rendering of *akolouthon* as the vaguer “concomitants” as opposed to the usual translation of it as “consequences.” This is crucial for whether we understand analysis to consist in strictly deductive steps or not; see below for my discussion of this issue.

In other words, working from the conclusion to be proved rather than the premises and axioms which will form its proof, one assumes the conclusion proved and asks what else we would know if it were proved (i.e., what would follow from the conclusion and what steps would have led to it) until one reaches something which does not depend on the assumption of the conclusion but is known independently to be true, e.g., an already proved theorem. The point of the process is not to discover the premises and axioms but to discover the *path* from those premises to the conclusions. This discovery of the path the proof should take is then followed by the proof itself, which Pappus calls synthesis, the Greek equivalent of *compositio*. It works in the opposite direction from the analysis, forward from the premises and axioms, like a traditional proof or Aristotelian demonstration, which is why Triverius opposes analysis in this sense not to synthesis or composition but to demonstration; demonstration has the same form as geometrical synthesis.

In his *Commentary on the Ethics*, Aquinas elaborates Aristotle's allusion to geometry as follows:

He says that the cause that is first in operation is the last in discovery because one who deliberates seems to inquire, it is said, by a kind of *resolutive* method, just as one who wishes to prove a conclusion by a diagram, i.e., a geometrical representation, must resolve the conclusion into principles until reaching the first indemonstrable principles.⁷⁸

Thus, it seems, just as one can solve a geometry problem *not* by working from the premises and axioms toward the conclusion to be proved, but from the conclusion by constructing a diagram of it, so one can decide what to do, *not* by working forward from present circumstances, but by working backwards from the end to be achieved. Though Aquinas drops explicit reference to the

⁷⁸ "Et dicit quod ideo causa que est prima in operatione est ultima in inventione, quia ille qui consiliatur videtur inquirere sicut dictum est per modum resolutionis cuiusdam, quemadmodum diagramma, id est descriptio geometrica in qua qui vult probare aliquam conclusionem oportet quod resolvat conclusionem in principia quousque perveniat ad principia prima indemonstrabilia." *In III Ethic*, lec. 8.

geometrical method in the *Summa*, he retains its structure, characterizing counsel in exactly the same way: "Hence the inquiry of counsel must be *resolutive*, namely beginning from that which is intended in the future, until it arrives at that which is to be immediately done."⁷⁹

While the geometrical method later given canonical form by Pappus seems to be the ultimate source for both Aristotle's and Aquinas's descriptions of counsel as resolutive, Aquinas's access to accounts of the geometrical process seems to have been indirect and incomplete. The evidence which would support Aquinas's having had a detailed understanding of this process is ambiguous. On the one hand, there are examples of roughly contemporary texts which reveal a relatively complete understanding of geometrical analysis. Albert the Great's commentary on the *Ethics*, written while Thomas was Albert's student, gives a specific example of geometrical analysis; also, a description very closely paralleling that of Pappus was inserted by an Arab commentator into Galen's *Ars Medica* or *Tegni* in the translation of Gerhard of Cremona.⁸⁰ Oeing-Hanhoff cites Galen as contributing heavily

⁷⁹ "Et secundum hoc, oportet quod inquisitio consilii sit resolutive, incipiendo scilicet ab eo quod in futuro intenditur, quousque perveniatur ad id quod statim agendum est." *ST* I-II, q. 14, a. 5.

⁸⁰ See Albert, *Super Ethica*, ed. Aschendorff, vol. 14, pt. 1, Bk. III, lec. V, p. 163. Albert writes, "Sicut si volumus ostendere, quod triangulus habet tres . . . , accipiemus, quod angulus extrinsecus valet duos intrinsecos sibi oppositos, et ad hoc necessario ostendendum sumimus, quod si linea recta cadat super duas aequidistantes, facit angulos coalternos aequales, et ad hoc iterum probandum, sumimus aliud, et sic, quousque veniamus ad primas propositiones. Ita si aliquis vult ditari, invenit, quod potest fieri per negotiationem et noc per navigationem, et ad hoc quaerit navem et ad hoc ligna." The preface to this critical edition (pp. V-VI) gives the argument for the 1250-1252 date, based heavily on William of Tocco's *Vita s. Thomae*, in which William relates that Thomas read Dionysius's *Divine Names* and Aristotle's *Ethics* with Albert at Cologne. See also Gerhard's translation, *Liber Tegni cum Commento Hali*, MS Vat. Pal. Lat. 1102, f. 117; ed. 1487, ff. 151r-152r. 'Hali' is Ali ibn Ridwan or Haly Rodohan, an 11th century Egyptian physician. This passage is given in both English and Latin by A. C. Crombie, *Grosseteste and Experimental Science*, pp. 77-78. The description of resolution (called *solution* here) is as follows: "Una earum est que fit secundum viam conversionis et solutionis, et est ut statuas rem ad quam intendis et cuius inquiris scientiam in mente tua

to the tradition of analysis by applying this method to medicine,⁸¹ and Aquinas seems to know something of the medical, as well as the ethical, application of the mathematical method, though he does not go quite so far as to call the medical version *resolutio*. Aquinas describes the process of producing health as reasoning back from the definition and requirements of health, i.e., the balance of the four humors, to that which is necessary to maintain that balance, i.e., heat, "and so on always proceeding from the posterior to the prior, one understands that which produces heat, and that which produces this, until one is led back to something ultimate which can be done immediately, such as giving a certain potion. . . ." ⁸² On the other hand, an earlier translation of the same Galenic work by Constantine the African, with a different accompanying commentary, glosses Galen's mention of resolution as dissolution or division, the sense of analysis found

secundum finem complementi eius. Et deinde consideres in propinquiori, et propinquiori ex eo sine quo non stat illa res; neque completur usquequo pervenias ad principium complementi eius." Crombie claims that "Gerhard's translation was certainly well known by the end of the thirteenth century and probably by a much earlier date" but gives no specific evidence for the earlier date. This passage continues by associating demonstration *quia* with *resolutio* and demonstration *propter quid* with *compositio*, but though Aquinas certainly knows and uses the distinction between the two types of demonstration, I have found no passages where he makes them equivalent to resolution and composition, though Dolan's account of resolution in Aquinas assumes that Aquinas associates these two pairs (Dolan, "Resolution and Composition," pp. 10-12).

⁸¹ Oeing-Hanhoff, "Analyse/Synthese," p. 238. Cf. Galen, *Opera Omnia*, ed. C. G. Kühn, I, 305; 5, 224ff.; 10, 39-44. This view of Galen is shared by Crombie (cf. *Grosseteste and Medieval Science*, pp. 27-28; 76-79) and Gilbert (*Renaissance Methods*, pp. 13-24). Oeing-Hanhoff distinguishes between the "analysis of a goal" and geometrical analysis, though it seems to me that these differ only in subject matter, not in structure; Oeing-Hanhoff also claims, despite the (at worst) mixed evidence, that Aquinas seems not to understand the geometrical sense of analysis ("Analyse/Synthese," p. 238).

⁸² "Et ideo necesse est, si sanitas debet contingere, quod hoc existat, scilicet regularitas vel aequalitas humorum. Et si regularitas vel debeat esse, oportet quod sit calor, per quem humores reducantur ad aequalitatem; et ita semper procedendo a posteriori ad prius, intelliget illud quod est factivum caloris, et quod est factivum illius, donec reducat ad aliquod ultimum, quod ipse statim posset facere, sicut hoc quod est dare talem potionem." *In Meta*, VII, lec. 6.

in Calcidius, not Pappus.⁸³ These two versions of the same text, one with and one without a reference to the geometrical method, and the uneven use of the terms "resolution" and "composition" to describe like processes, might be evidence of a certain uneven and superficial knowledge of it in the 12th and even 13th centuries, though there are references to geometrical analysis in the Greek commentators.⁸⁴

My own sense is that Aquinas lacked (and was perhaps uninterested in) a technical knowledge of this process which would have given him a sense of how complicated and sophisticated its actual use in geometry could be, but that he had an accurate general grasp of its structure and purpose, enough to allow him to use the notion and fit it into his larger picture of the various forms discursivity could take. Hence, I would like to take a non-technical look at geometrical analysis in order to examine how Aristotle and Aquinas thought it might work analogously in practical reasoning. While there are longstanding and complicated debates about the character of the particular steps of geometrical analysis—whether one *deduces* consequences from the conclusion or looks for possible *antecedents* of the conclusion, for example—Pappus's description is clear enough to allow us to see why Aristotle and Aquinas saw the structure of searching for the correct course of action as symmetrical to this search for the right way to the conclusion.⁸⁵ As all remember from geometry class, it

⁸³ Constantine's *Pantegni theorica* gives Galen five methods: "secundum dissolutionem, aut secundum compositionem, aut secundum dissolutionem termini, aut secundum notationem, vel descriptionem, aut secundum divisionem." It goes on to describe "dissolutio" *per se* as the dissolution of a body into its elements, and the dissolution of terms as the breakdown of a definition into genus and specific differences. I wish to thank Mark Jordan for giving me drafts of a critical edition of this text he is working on.

⁸⁴ See for example, Alexander, *In Pr Anal*, p. 7, ll. 15-18; Ammonius, *In Pr Anal*, p. 5, ll. 26-31.

⁸⁵ For the debate on analysis, see F. M. Cornford, *op. cit.*, n. 8, for the view that the steps are the "intuitive" search for antecedents, according to a method connected to Plato's description of the upward movement of dialectic in the *Republic*; see Richard Robinson, "Analysis in Greek Geometry," *Mind*, vol. 45 (1936), pp. 464-473, for the view that the steps are deductions from the

is inefficient, if not impossible, to solve a geometry problem by beginning from what is given, and trying to find one's way to the conclusion to be proved without being directed by and in some sense working back from that which is to be proved. The method known in geometry as analysis is ultimately, I think, the formalization and sophistication of this process in which one examines the conclusion in light of both what might lead to it and follow from it in order to avoid striking out aimlessly from the premises.⁸⁶ Similarly in practical reasoning, beginning with the end rather than with its equivalent of the given, present circumstances, excludes from the outset of the inquiry that which will not bring it to the desired conclusion, i.e., possible courses of action which are irrelevant to the end for which action is undertaken. Such a process must involve in practice keeping both extremes (the given and conclusion, present circumstances and the end) in mind and working between them. Even though analysis is described only as working from the *end*, the inquiry must still be constrained at the other end; in geometry, one must also exclude paths to the conclusion which premises and axioms will not allow, and in action we must exclude those acts that would achieve the end but which are neither immediately nor mediately possible to us.

conclusion; this view is repeated by Michael Mahoney, "Another Look at Greek Geometrical Analysis," *Archive for the History of the Exact Sciences*, vol. 5 (1968), pp. 318-348, who also develops the view that analysis is not so much a set *method* as a set of techniques, a "mathematical toolbox," for solving problems. See also Norman Gulley, op. cit., n. 8, who, in a way, splits the difference, arguing that there are *two* kinds of analysis in Pappus, one corresponding more closely to Cornford's view, the other to Robinson's et al. I discuss Hintikka and Remes's view below.

⁸⁶ I take from Hintikka and Remes the notion that analysis moves to things that "go with" or are concomitant with the conclusion, whether logically consequent, antecedent, or parallel to the conclusion. They remark, quite correctly, in response to the objection (made by Mahoney in "Another Look") that looking for antecedents is "aimless," that "looking for antecedents is not an intrinsically more 'aimless' procedure (nor a less aimless one, for that matter) than casting about for suitable consequences" (*Method of Analysis*, p. 19). My view, perhaps not shared by them, is that it is exactly this possible aimlessness of inquiry that analysis is meant to mitigate (though not eliminate) by giving the inquiry direction from the conclusion.

Especially for thinkers not completely familiar with geometrical uses of analysis, this type of analysis shares certain resonances with the other two meanings, which helps explain why it is so often confounded and conflated with the other two notions outlined here. It is, first, in an extended sense at least, a *division* of a complex whole and thus like Calcidian resolution. We “break-down” or reduce a complex practical problem (like a complicated geometry problem) into its smaller parts, moving from the complex, “What should I do?” to more workable chunks, “What do I want to achieve?”, “How can this end be achieved?”, “What are the possibilities at present which will move me in that direction?”, and “Which of those paths will bring me most surely and completely to that end?” These are exactly the steps or parts of taking counsel that both Aristotle and Aquinas describe immediately before calling counsel “resolutive.”⁸⁷

However, as is clear from Aquinas’s description of taking counsel, the breakdown of a problem is meaningless unless done in light of the end or conclusion and, hence, as Pappus notes, “in order”; secondly, then, because the Neoplatonic notion is grounded in the direction of reasoning to the first principle, the resolution of counsel/geometry is in an equally important sense aligned with this sense. There are ultimately two “ends” in the resolution of a practical problem: the final end to be achieved, which serves to direct reasoning, and the “end” in the sense of the conclusion of a resolution as it returns to present circumstances from the end to be achieved. Both are analogous to the “end” of Neoplatonic resolution in the first, highest, and simplest cause. Just as a geometrical resolution ends when one reaches the simpler axioms and premises from which one began

⁸⁷ *EN* 1112b16-20; *In III Ethic*, lec. 8: “Ostendit de quibus et quomodo sit inquisitio concilii. Circa quod tria ponit. Quorum primum est quod, supposito aliquo fine, prima intentio consilantium est qualiter, id est quo motu vel actione possit perveniri ad illum finem. . . . Secunda autem intentio est quando ad finem aliquem per plura potest perveniri, . . . per quid eorum facilius et melius perveniatur. . . . Tertia autem intentio est, si contingat quod per unum solum instrumentum vel motum, vel per unum optime, perveniatur ad finem, ut procuretur qualiter per hoc ad finem perveniatur.”

and from which the more complex conclusion is now understood to follow, so in practical reasoning one's resolution ends where it began, from the present from which, by the discovered series of steps, the end will follow. Moreover, that end of action, notably for Aquinas the same as the goal of Neoplatonic resolution, i.e., the divine, is that in terms of which action is both possible and intelligible; it is the origin to which we are by action and in inquiry returning. Aquinas, indeed, makes the analogy between the "end" of speculative reason in higher principles and the "end" of practical reason in the final goal of action: "In the speculative sciences the judgment of reason is not perfected until conclusions are resolved into first principles; hence, neither in practical matters is [judgment] perfected until a reduction is made to the last end."⁸⁸ Like the simpler, higher causes to which Neoplatonic resolution returns, the final end of action contains in a unified way all the steps taken toward it.

As applied to action, even while this sense of resolution has connections to the other two, it is, I think, unique. In Aquinas (if not in others describing this type of resolution), it points not, as the other types do, to different kinds of metaphysical principles, but rather primarily to the *process* of acting and reasoning to reach those ends or principles.⁸⁹ To put it another way, while the other senses focus on the first principles which reason discovers (Calcidius) or to which it returns (Proclus), this notion

⁸⁸ "In speculativis autem scientiis non perficitur iudicium rationis nisi quando conclusiones resolvuntur in prima principia; unde nec inoperabilibus perficitur nisi quando fiat reductio usque ad ultimum finem." *QDV*, q. 15, a. 3.

⁸⁹ This type of analysis/resolution is not metaphysically neutral or ambiguous, for example, in Proclus; his descriptions of analysis in the context of Euclid is shot through with his own metaphysics, with a Neoplatonic conception of science as mirroring the emanation and return to the One. In the Renaissance, this conception of resolution/analysis is formulated to serve a quite different notion of science. According to J. H. Randall resolution becomes an important "method" in a fledgling experimental science searching for explanations of phenomena in the Renaissance; it is sometimes equated with demonstration *quia* and even with induction. See above, n. 80 and J. H. Randell, Jr., "Scientific Method in the School of Padua," *Journal of the History of Ideas* 1 (1940), pp. 177-206, and Crombie, *Grosseteste and Experimental Science* (cited in n. 4 above).

focuses on the process of *connecting* principles and conclusions. For Aquinas, this is the essence of a *discursive* rather than a wholly intuitive or synthetic reason, i.e., one that *moves* from one thing to another but does not grasp everything at once.⁹⁰ We need geometrical analysis and its analogues not only because we do not synthetically grasp principle and conclusion together, but because we cannot even always see the direct and necessary path from one to the other, *from* principles *to* conclusion; instead we sometimes must work backward *from* the conclusions *to* the principle, or back and forth between them.⁹¹ Our actions are, for Aquinas, equally discursive, i.e., our ends are achieved piecemeal rather than instantaneously, and only when directed by that end. Moreover, because both reasoning and action are achieved in stages, the possibility of failing to reach that end is essentially and constantly present; for Aquinas, it is of the nature of our intellect and will that we can grasp premises without reaching the right conclusion, and that we can will ends without willing the means and achieving our end.⁹²

IV. Conclusion

This conclusion about the ultimate incompleteness and intrinsic possibility of failure of human action and reasoning brings us, or rather returns us, to what these three types of resolution share in Aquinas: their expression of human reason as discursive. The metaphor Aquinas uses to illustrate the structure of reason's discursive path, moving from and toward principles, is that of a circle:

⁹⁰ For one of several places where Aquinas gives this definition of *reason* as opposed to *intellectus*, see *Exp in Trin*, q. 6, a. 1.

⁹¹ Cf. *ST* I-II, q. 14, a. 5: "Quod quidem si, sicut est prius in cognitione, ita etiam sit prius in esse, non est processus resolutorius, sed magis compositivus, procedere enim a causis in effectus, est processus compositivus, nam causae sunt simpliciores effectibus. Si autem id quod est prius in cognitione, sit posterius in esse, est processus resolutorius; utpote cum de effectibus manifestis iudicamus, resolvendo in causas simplices."

⁹² "Unde intellectus aliquando intelligit medium, et ex eo non procedit ad conclusionem. Et similiter voluntas aliquando vult finem, et tamen non procedit ad volendum id quod est ad finem." *ST* I-II, q. 8, a. 3, ad 3.

The circularity [of reason] is observed in this, that reason arrives at conclusions from principles according to the way of discovery, and examines discovered conclusions according to the way of judgment, resolving them back into principles.⁹³

Even though in this particular passage Aquinas uses resolution in the Neoplatonic sense, in one way or another all the types of resolution fit into the pattern of reasoning outlined here. Though whether resolution precedes or follows its complement changes, in each case resolution is seen first as a *movement* and second as a movement which is *never complete* in itself; it requires its complement, *compositio*, to form a "circle" of reasoning which begins from and returns to that from which it started with greater understanding. Calcidian resolution, the breakdown of a complex whole, is followed by the recomposition of the complex from its parts. Thus reason is led back to the object from which it began, now understood more completely both as a whole and in its parts. Resolution, as a problem-solving technique derived from Greek geometry, in which one moves from conclusions to premises, is also followed by an opposite movement. Just as the resolution of geometry is followed by the actual proof of the conclusion moving forward from the premises, the resolution of counsel, which works back from the end, is followed by a judgment of those connections and the actual execution of that course of action moving forward from the present. Lastly, in the Neoplatonic sense, resolution is the return to simple and unified principles and causes which is preceded by *compositio*, the movement from principles and causes, less than completely understood, to conclusions and effects. In each case *resolutio* fits into this dialectic or circle of understanding as the movement from those things better known to us to those things better known *per se*.⁹⁴ However, *how* it fits in, as the *first* movement of reason in *discovery* or as the *last* movement of reason confirming and *judging*,

⁹³ "Haec autem circulatio attenditur in hoc quod ratio ex principiis secundum viam inveniendi in conclusiones pervenit, et conclusiones inventas in principia resolvendo examinat secundum viam iudicandi." *QDV*, q. 10, a. 8, ad 10.

⁹⁴ See *ST* I-II, q. 14, a. 5, quoted above, n. 91.

as movement toward parts, causes, or present and immediate circumstances, differs depending upon the needs of the inquiry at hand and the sort of principles it seeks.

In fact, the different sources I have argued for here and the diverse contexts in which Aquinas makes use of these different senses suggest different, though not exclusive, realms of discourse for which the different types of *resolutio* are appropriate. The Aristotelian and Calcidian sources for the divisive/reductive sense align this type of resolution especially with physics and its need to begin from and break down the complex objects and processes with which we are confronted in our experience of the world. Hence Aquinas, explaining resolution in this sense, refers us back to the opening of the *Physics* and Aristotle's reminder that we begin inquiry with confused wholes whose parts we will analyze. Moreover, analysis in this sense is combined with and followed by a compositive movement back toward the complex from which the original resolution began. This accords with Aquinas's frequently stated view that it is the particular character of natural science to return to the sensible object from which it began.⁹⁵ The source of the third sense in a set of problem-solving techniques called *analysis* in Greek geometry suggested to Aristotle and Aquinas an analogy with ethical discourse. Ethical reasoning, though perhaps only in a more immediate sense than other types of reasoning, has a special need for direction toward an end, for a technique that allows one to narrow down the possible options so that one can more quickly and efficiently come to a decision, i.e., for a way of thought that will connect present circumstances and final ends. Finally, the sense of the term I have traced to Neoplatonic thinkers, the resolving of effects into higher causes and principles, Aquinas associates with metaphysics' consideration of things in light of their highest causes and most universal principles. Hence, though these notions of

⁹⁵ See, for example, *Exp de Trin*, q. 6, a. 2 and *ST I*, q. 85, a. 8. It is important to note that in both these places, Aquinas makes it clear that the return to the sensible object is the end of *natural* science, and in *De Trinitate* explicitly sets up this endpoint in contrast to the termini of mathematics and metaphysics.

resolution are truly different in terms of their origin and their use by Aquinas, all the senses are retained and used strategically in association with different uses of reason; what we have, then, in Aquinas's notion of resolution is the coexistence of terminologies from different epistemological traditions which have been appropriated, rather than merely borrowed, and reshaped by their placement within his notion of human reason and its sciences.

There is also, I think, a deeper but less explicit division among these types of resolution/analysis in Aquinas. Geometrical and divisive resolution are initial movements of reason which understand reason to begin from the complex conclusion or a compound substance. Neoplatonic resolution, on the other hand, follows a process which is understood to begin with some implicit grasp of simple principles. Thus their respective epistemological implications are different, one envisioning knowledge as grounded in and made possible by a knowledge of principles, the other two describing knowledge as beginning in our experience of the composite being. In the *Summa* Aquinas confronts the dilemma implied by the opposition between the processes' beginning points, asking whether the "universal" is first in our knowledge. Aquinas's response carefully places *both* pictures of the beginning of knowledge within his own view. He argues that if we take sensation and intellectual comprehension separately, the more common and universal is first, as each moves from a general but confused grasp to a defined and distinct knowledge of the thing; thus we move from the grasp of a thing as a being to a grasp of it as possessing a specific nature. However, if we take the process of knowledge as it moves from sensation through intellection, the particular, complex individual is "first" in knowledge because knowledge begins with sensation, which apprehends the individual.⁹⁶

But these processes not only "begin" differently, they "end" differently as well. Resolution as division and resolution in the geometrical sense are both halves of processes which "end"

⁹⁶ ST I, q. 85, a. 3.

with composition, i.e., by returning to conclusions and complexes, not to the principles they began by seeking. Neoplatonic resolution, by contrast, is the second half of a process whose ultimate direction is toward principles, not conclusions. In this sense, Neoplatonic resolution is different from the other two, and for Aquinas is a more perfect representative of human reason, whose ultimate goal is the understanding of things in the highest and most universal causes. It is only resolution in this sense that Aquinas calls *wisdom*; wisdom "judges all things and sets them in order, because there can be no perfect and universal judgment that is not resolved into first causes."⁹⁷ Wisdom, it is worth noting, is not *just* the grasp of principles but of all things *resolved* into principles, understood as grounded by those principles.⁹⁸ Thus though both of these processes "end" with principles or with conclusions, neither consists in only the grasp of one or the other, but of one *in* the other. And this is exactly the problem for the human knower, i.e., that our reason is always attempting but never quite succeeding in holding together the grasp of principles and conclusions by knowing one *in* the other.

Though this would in some sense have to be qualified and expanded by a study of the other terms and other ways Aquinas uses to describe the movement of reason, the theme of the ultimate incompleteness of human reasoning, of its failure to grasp things completely in a unified fashion, appears in two important passages dealing with resolution and composition, one in the relatively late *Commentary on the Metaphysics* in a discussion of Calcidian/Aristotelian analysis, and the other in the early *Commentary on De Trinitate* expanding on the Neoplatonic resolution of multiplicity into unity. In the first passage, Aquinas in-

⁹⁷ "Et circa huiusmodi est sapientia, quae considerat altissimas causas, ut dicitur in I *Meta*. Unde convenienter iudicat et ordinat de omnibus: quia iudicium perfectum et universale haberi non potest nisi per resolutionem ad primas causas." *ST* I-II, q. 57, a. 2. Cf. *ST* II-II, q. 9, a. 2.

⁹⁸ Cf. *ST* I-II, q. 57, a. 2, ad 1 where Aquinas describes wisdom as the grasp of principles and conclusions.

terpolates the discussion of *resolutio* and *compositio* into an explanation of Aristotle's remark that "we cannot simultaneously grasp a whole and its parts (993b5-7)." After describing *resolutio* and *compositio*, Aquinas writes, "Thus the fact that a human being is unable to know perfectly in things a whole and a part shows the difficulty involved in knowing the truth by both of these methods."⁹⁹ Though the resolution described here is the division of a whole into its parts, his point seems to apply to all three types, i.e., that these two halves of the movement of reason have as their goal either the whole or the part, the simple or the complex, the conclusion or the principles, but reason by its very nature as discursive cannot grasp *both* equally well at the same time. In the *Summa* Aquinas explains that "the intellect can indeed understand many things at one time, but not *as many*."¹⁰⁰ Our choice is either to know many things at once but only indistinctly *as one*, or to know multiple things or multiple aspects as multiple but not *at once*, but only sequentially, under different intelligible species.¹⁰¹ The problem is not quite that we are absolutely incapable of knowing part and whole, premise and conclusion together, but that we can only grasp them together by knowing one *in* the another, always "losing" in a sense the whole when focused on the part, and the part when focussed on the whole. Thus reason's dialectic is never completely resolved, never reaches complete closure and rest.

In the description of resolution and composition in his *De Trinitate* commentary, as in *De Veritate*, Aquinas likens our reasoning to this circle. *Ratio* as movement and *intellectus* as rest, Aquinas cites from Boethius, are related to each other "as time

⁹⁹ "Sic igitur hoc ipsum, quod homo non potest in rebus perfecte totum et partem cognoscere, ostendit difficultatem considerandae veritatis secundum utramque viam." *In II Meta.*, lec. 1.

¹⁰⁰ "Intellectus quidem potest multa intelligere per modum unius, non autem multa per modum multorum." *ST I*, q. 85, a. 4.

¹⁰¹ "Quod partes possunt intelligi dupliciter. Uno modo, sub quadam confusione, prout sunt in toto: et sic cognoscuntur per unam formam totius, et sic simul cognoscuntur. Alio modo, cognitione distincta, secundum quod quaelibet cognoscitur per suam speciem: et sic non simul intelliguntur." *ST I*, q. 85, a. 4, ad 3.

to eternity and as a circle to its center.”¹⁰² The metaphor is apt because, like the circular path of the heavenly bodies imitating the first mover, the “circular” path of reasoning is for Aquinas the human imitation of the *intellectus* of God and the angels, who comprehend immediately and intuitively a multiplicity in unity and a unity in multiplicity. Ultimately and in all senses the need for resolution and composition, the movements describing and circumscribing the dialectical structure of our reasoning, is a mark of the *imperfection* of our imitation of the divine *intellectus*, of human reason as sequential rather than synoptic, as discursive rather than intuitive, in short, as incomplete yet directed from and toward principles.

¹⁰² “Quod similiter se habent ratio ad intellectum et tempus ad aeternitatem et circulus ad centrum.” *Exp de Trin*, q. 6, a. 1, sol. c.